

AMENDMENTS TO THE CLAIMS

Claim 1. (Currently amended) A SOFC system including a fuel cell having a fuel intake, an air intake, a cathode exhaust and an anode exhaust, and comprising an integrated module comprising an afterburner, a fuel processor and a heat exchanger, wherein:

- (a) said afterburner comprises an intake connected to the anode exhaust, ~~or anode and cathode exhausts,~~ and an igniter;
- (b) said heat exchanger comprises an intake connected to an ~~the~~ air supply and an exhaust connected to the air intake of the SOFC wherein the heat exchanger is thermally coupled to the afterburner; ~~and~~
- (c) said fuel processor comprises an intake connected to a ~~the fuel/water~~ fuel supply, a fuel reforming catalyst, and an exhaust connected to the fuel intake of the SOFC wherein the fuel processor is thermally coupled to the heat exchanger and/or the afterburner; and
- (d) said integrated module comprises a discrete housing, separate from the fuel cell, which wholly contains the afterburner, heat exchanger and fuel processor.

Claim 2. (Original) The SOFC system of claim 1 wherein the module comprises three concentric stages, wherein the afterburner comprises a central elongate, substantially cylindrical tube, the heat exchanger surrounds the afterburner, and the fuel processor surrounds the heat exchanger.

Claim 3. (Original) The SOFC system of claim 2 further comprising a baffle within the heat exchanger for routing air along an indirect path from the heat exchanger intake to the heat exchanger exhaust.

Claim 4. (Original) The SOFC system of claim 3 wherein said baffle comprises an inclined plane which encircles the afterburner.

Claim 5. (Original) The SOFC system of claim 2 further comprising heat fins projecting from the heat exchanger into the fuel processor.

Claim 6. (Currently amended) The SOFC system of claim 1 further comprising a low temperature heat exchanger which accepts the exhaust of the afterburner to preheat air and/or ~~fuel/water~~ fuel entering the integrated module.

Claim 7. (Currently amended) An integrated module for use with a SOFC having an intake ~~fuel/water~~ fuel stream, an intake air stream, a cathode exhaust stream and an anode exhaust stream, said module comprising:

- (a) an inlet for accepting the anode exhaust stream or anode and cathode exhaust streams from the SOFC;
- (b) a combustion chamber in fluid communication with the exhaust stream inlet comprising an igniter and an exhaust;
- (c) a heat exchanger associated with the combustion chamber for transferring heat from the combustion chamber to the intake air stream of the SOFC; ~~and~~
- (d) a fuel processor associated with the combustion chamber and/or heat exchanger comprising a source of water or steam and a reforming catalyst wherein the intake fuel stream is ~~first~~ combined with water or steam, then heated and passed over the catalyst within the fuel processor to enrich the fuel in hydrogen prior to entering the SOFC; and

in which the combustion chamber, fuel processor and heat exchanger are wholly contained within a discrete housing separate from the SOFC.

Claim 8. (Original) The integrated module of claim 7 wherein the combustion chamber is an elongate cylinder and the heat exchanger concentrically encircles the combustion chamber.

Claim 9. (Original) The integrated module of claim 8 wherein the fuel processor concentrically encircles the heat exchanger.

Claim 10. (Original) The integrated module of claim 9 wherein the fuel processor comprises a plurality of heat fins projecting from the heat exchanger into the fuel processor and a perforated baffle block for retaining the catalyst while permitting fluid flow through the fuel processor.

Claim 11. (Cancelled)

Claim 12. (Cancelled)

Claim 13. (Cancelled)

Claim 14. (Cancelled)

Claim 15. (Currently Amended) A SOFC system including a fuel cell having a fuel intake, an air intake, a cathode exhaust and an anode exhaust, and comprising an integrated module comprising an afterburner, a fuel processor and a heat exchanger, wherein:

- (a) said afterburner comprises a central elongate, substantially cylindrical tube, an intake at one end of the tube connected to the anode exhaust ~~and cathode exhaust~~ and an igniter;
- (b) said heat exchanger surrounds the afterburner and comprises an intake connected to the air supply and an exhaust connected to the air intake of the SOFC; and
- (c) said fuel processor surrounds the heat exchanger and comprises an intake connected to the fuel supply ~~water~~, a fuel reforming catalyst, and an exhaust connected to the fuel intake of the SOFC.

Conclusion

It is respectfully submitted that the application is in condition for allowance and allowance thereof is requested.

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